

Set	Items	Description
S1	1499	CHIMER?(4N)OLIGONUCLEOTIDE?
S2	86	S1 AND (MUTAT? OR MUTAGEN?) AND PLANT?
S3	25	RD (unique items)

>>>KWIC option is not available in file(s): 41, 77, 399

3/3,K/1 (Item 1 from file: 5)
 DIALOG(R) File 5: Biosis Previews(R)
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13095296 BIOSIS NO.: 200100302445
**In vitro and in vivo nucleotide exchange directed by *chimeric* RNA/DNA
 oligonucleotides in *Saccharomyces cerevisiae*.**
 AUTHOR: Rice Michael C; Bruner Michael; Czymmek Kirk; Kmiec Eric B(a)
 AUTHOR ADDRESS: (a)Department of Biological Sciences, Delaware
 Biotechnology Institute, University of Delaware, Newark, DE, 19716:
 ekmiiec@udel.edu**USA
 JOURNAL: Molecular Microbiology 40 (4):p857-868 May, 2001
 MEDIUM: print
 ISSN: 0950-382X
 DOCUMENT TYPE: Article
 RECORD TYPE: Abstract
 LANGUAGE: English
 SUMMARY LANGUAGE: English

**In vitro and in vivo nucleotide exchange directed by *chimeric* RNA/DNA
 oligonucleotides in *Saccharomyces cerevisiae*.**

ABSTRACT: Targeted gene repair directed by *chimeric* RNA/DNA
 oligonucleotides has proven successful in eukaryotic cells including
 animal and *plant* models. In many cases, however, there has been a
 disparity in the levels of gene correction or frequency. While the
 delivery of these chimera into...

...conversion whereas RAD52 appears to act, surprisingly, in a suppressive
 fashion. Results from the in vitro experiments were translated into
 targeting experiments in vivo. Here, *mutations* in a fusion construct,
 containing a marker gene, were converted to wild type, evidenced by the
 expression of green fluorescence in converted cells. Because the...

DESCRIPTORS:
 ...BIOSYSTEMATIC NAMES: Fungi, *Plantae*
 ...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Nonvascular *Plants*;
 Plants

3/3,K/2 (Item 2 from file: 5)
 DIALOG(R) File 5: Biosis Previews(R)
 (c) 2001 BIOSIS. All rts. reserv.

13019017 BIOSIS NO.: 200100226166
The potential of nucleic acid repair in functional genomics.
 AUTHOR: Rice Michael C; Czymmek Kirk; Kmiec Eric B(a)
 AUTHOR ADDRESS: (a)Department of Biological Science, University of
 Delaware, Newark, DE, 19716: ekmiiec@udel.edu**USA
 JOURNAL: Nature Biotechnology 19 (4):p321-326 April, 2001
 MEDIUM: print
 ISSN: 1087-0156
 DOCUMENT TYPE: Literature Review
 RECORD TYPE: Abstract
 LANGUAGE: English
 SUMMARY LANGUAGE: English

ABSTRACT: *Chimeric* RNA/DNA *oligonucleotides* have been used successfully
 to correct point and frameshift *mutations* in cells as well as in animal
 and *plant* models. This approach is one of several nucleic acid repair
 technologies that will help elucidate the function of newly discovered
 genes. Understanding the mechanisms by...

DESCRIPTORS:

...BIOSYSTEMATIC NAMES: *Plantae*
...ORGANISMS: *plant* (*Plantae*)
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*
MISCELLANEOUS TERMS: frameshift *mutations*; ...

...point *mutations*

BIOSYSTEMATIC CODES:

11000 *Plantae*-Unspecified...

3/3,K/3 (Item 3 from file: 5)

DIALOG(R)File 5:Biosis Previews(R)

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12842381 BIOSIS NO.: 200100049530

The DNA strand of *chimeric* RNA/DNA *oligonucleotides* can direct gene repair/conversion activity in mammalian and *plant* cell-free extracts.

AUTHOR: Gamper Howard B; Parekh Hetal; Rice Michael C; Bruner Michael;

Youkey Heather; Kmiec Eric B(a)

AUTHOR ADDRESS: (a)Department of Biological Sciences, University of

Delaware, 105 Wolf Hall, Newark, DE, 19716: ekmiec@udel.edu**USA

JOURNAL: Nucleic Acids Research 28 (21):p4332-4339 November 1, 2000

MEDIUM: print

ISSN: 0305-1048

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

The DNA strand of *chimeric* RNA/DNA *oligonucleotides* can direct gene repair/conversion activity in mammalian and *plant* cell-free extracts.

ABSTRACT: *Chimeric* *oligonucleotides* (*chimeras*), consisting of RNA and DNA bases folded by complementarity into a double hairpin conformation, have been shown to alter or repair single bases in *plant* and animal genomes. An uninterrupted stretch of DNA bases within the chimera is known to be active in the sequence alteration while RNA residues aid...

...of all RNA or DNA residues and various mixtures, several new structures have emerged as viable molecules in nucleotide conversion. When extracts from mammalian and *plant* cells and a genetic readout assay in bacteria are used, single-stranded oligonucleotides, containing a defined number of thioate backbone modifications, were found to be...

...structure in the process of gene repair. Single-stranded oligonucleotides containing fully modified backbones were found to have low repair activity and in fact induce *mutation*. Molecules containing various lengths of modified RNA bases (2'-O-methyl) were also found to possess low activity. Taken together, these results confirm the directionality of nucleotide conversion by the DNA strand of the chimera and further present a novel, modified single-stranded DNA molecule that directs conversion in *plant* and animal cell-free extracts.

3/3,K/4 (Item 4 from file: 5)

DIALOG(R)File 5:Biosis Previews(R)

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12592846 BIOSIS NO.: 200000346348

Engineering herbicide-resistant maize using *chimeric* RNA/DNA *oligonucleotides*.

AUTHOR: Zhu Tong; Mettenburg Kathryn; Peterson David J; Tagliani Laura;

Baszczynski Chris L(a)

AUTHOR ADDRESS: (a)Trait and Technology Development, Pioneer Hi-Bred

International, Inc., 7250 NW 62nd Ave., Johnston, IA, 50131-0552**USA

JOURNAL: Nature Biotechnology 18 (5):p555-558 May, 2000

MEDIUM: print
ISSN: 1087-0156
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

**Engineering herbicide-resistant maize using *chimeric* RNA/DNA
oligonucleotides.**

ABSTRACT: Maize *plants* resistant to imidazolinone herbicides were engineered through targeted modification of endogenous genes using *chimeric* RNA/DNA *oligonucleotides*. A precise single-point *mutation* was introduced into genes encoding acetohydroxyacid synthase (AHAS), at a position known to confer imidazolinone resistance. Phenotypically normal *plants* from the converted events (C0) were regenerated from resistant calli and grown to maturity. Herbicide leaf painting confirmed the resistance phenotype in C0 *plants* and demonstrated the anticipated segregation pattern in C1 progeny. DNA cloning and sequencing of the targeted region in resistant calli and derived C0 and C1 *plants* confirmed the expected *mutation*. These results demonstrate that oligonucleotide-mediated gene manipulation can be applied to crop improvement. This approach does not involve genomic integration of transgenes. Since the...

DESCRIPTORS:

...BIOSYSTEMATIC NAMES: Monocotyledones, Angiospermae, Spermatophyta,
Plantae

...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*

CHEMICALS & BIOCHEMICALS: *chimeric* RNA-DNA *oligonucleotides*;

3/3,K/5 / (Item 5 from file: 5)

DIALOG(R) File 5:Biosis Previews(R)
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12571000 BIOSIS NO.: 200000324502

**Genetic repair of *mutations* in *plant* cell-free extracts directed by
specific *chimeric* *oligonucleotides*.**

AUTHOR: Rice Michael C; May Gregory D; Kipp Peter B; Parekh Hetal; Kmiec
Eric B(a)

AUTHOR ADDRESS: (a)Department of Biological Sciences, University of
Delaware, Newark, DE, 19716**USA

JOURNAL: Plant Physiology (Rockville) 123 (2):p427-437 June, 2000

MEDIUM: print

ISSN: 0032-0889

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

**Genetic repair of *mutations* in *plant* cell-free extracts directed by
specific *chimeric* *oligonucleotides*.**

ABSTRACT: *Chimeric* *oligonucleotides* are synthetic molecules comprised of RNA and DNA bases assembled in a double hairpin conformation. These molecules have been shown to direct gene conversion events...
...gene repair in mammalian cells has been partially elucidated through the use of a cell-free extract system. Recent experiments have expanded the utility of *chimeric* *oligonucleotides* to *plants* and have demonstrated genotypic and phenotypic conversion, as well as Mendelian transmission. Although these experiments showed correction of point and frameshift *mutations*, the biochemical and mechanistic aspects of the process were not addressed. In this paper, we describe the establishment of cell-free extract systems from maize (*Zea mays*), banana (*Musa acuminata* cv Rasthali), and tobacco (*Nicotiana tabacum*). Using a genetic

readout system in bacteria and *chimeric* *oligonucleotides* designed to direct the conversion of *mutations* in antibiotic-resistant genes, we demonstrate gene repair of point and frameshift *mutations*. Whereas extracts from banana and maize catalyzed repair of *mutations* in a precise fashion, cell-free extracts prepared from tobacco exhibited either partial repair or non-targeted nucleotide conversion. In addition, an all-DNA hairpin molecule also mediated repair albeit in an imprecise fashion in all cell-free extracts tested. This system enables the mechanistic study of gene repair in *plants* and may facilitate the identification of DNA repair proteins operating in *plant* cells.

DESCRIPTORS:

...BIOSYSTEMATIC NAMES: Monocotyledones, Angiospermae, Spermatophyta, *Plantae*; ...

...Monocotyledones, Angiospermae, Spermatophyta, *Plantae*; ...

...Dicotyledones, Angiospermae, Spermatophyta, *Plantae*

...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*

MISCELLANEOUS TERMS: ...*mutations*--...

...*plant* cell-free extracts

3/3,K/6 (Item 6 from file: 5)

DIALOG(R) File 5:Biosis Previews(R)

(c) 2001 BIOSIS. All rts. reserv.

12083069 BIOSIS NO.: 199900377918

**A tool for functional *plant* genomics: *Chimeric* RNA/DNA
oligonucleotides cause in vivo gene-specific *mutations*.**

AUTHOR: Beetham Peter R; Kipp Peter B; Sawycky Xenia L; Arntzen Charles J;
May Gregory D(a)

AUTHOR ADDRESS: (a)Samuel Roberts Noble Foundation, 2510 Sam Noble Parkway,
Ardmore, OK, 73402**USA

JOURNAL: Proceedings of the National Academy of Sciences of the United
States of America 96 (15):p8774-8778 July 20, 1999

ISSN: 0027-8424

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

**A tool for functional *plant* genomics: *Chimeric* RNA/DNA
oligonucleotides cause in vivo gene-specific *mutations*.**

ABSTRACT: Self-complementary *chimeric* *oligonucleotides* (COs) composed of DNA and modified RNA residues were evaluated as a means to (i) create stable, site-specific base substitutions in a nuclear gene and (ii) introduce a frameshift in a nuclear transgene in *plant* cells. To demonstrate the creation of allele-specific *mutations* in a member of a gene family, COs were designed to target the codon for Pro-196 of SuRA, a tobacco acetolactate synthase (ALS) gene. An amino acid substitution at Pro-196 of ALS confers a herbicide-resistance phenotype that can be used as a selectable marker in *plant* cells. COs were designed to contain a 25-nt homology domain comprised of a five-deoxyribonucleotide region (harboring a single base mismatch to the native...

...loci by catalyzing either a base substitution or a base addition to specific nuclear genes; this approach should have great utility in the area of *plant* functional genomics.

DESCRIPTORS:

...BIOSYSTEMATIC NAMES: Dicotyledones, Angiospermae, Spermatophyta, *Plantae*

...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*

CHEMICALS & BIOCHEMICALS: *chimeric* RNA/DNA *oligonucleotides*---...

...acetolactate synthase gene, site-specific *mutation*

3/3,K/7 (Item 7 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

12083068 BIOSIS NO.: 199900377917

**Targeted manipulation of maize genes in vivo using *chimeric* RNA/DNA
oligonucleotides.**

AUTHOR: Zhu Tong; Peterson David J; Tagliani Laura; St Clair Grace;
Baszczynski Chris L(a); Bowen Ben
AUTHOR ADDRESS: (a)Trait and Technology Development, Pioneer Hi-Bred
International, Inc., 7250 N.W. 62nd Avenue, Jo**USA
JOURNAL: Proceedings of the National Academy of Sciences of the United
States of America 96 (15):p8768-8773 July 20, 1999
ISSN: 0027-8424
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

**Targeted manipulation of maize genes in vivo using *chimeric* RNA/DNA
oligonucleotides.**

ABSTRACT: Site-specific heritable *mutations* in maize genes were
engineered by introducing *chimeric* RNA/DNA *oligonucleotides*. Two
independent targets within the endogenous maize acetohydroxyacid synthase
gene sequence were modified in a site-specific fashion, thereby
conferring resistance to either imidazolinone or...

...herbicides. Similarly, an engineered green fluorescence protein
transgene was site-specifically modified in vivo. Expression of the
introduced inactive green fluorescence protein was restored, and *plants*
containing the modified transgene were regenerated. Progeny analysis
indicated Mendelian transmission of the converted transgene. The
efficiency of gene conversion mediated by *chimeric* *oligonucleotides*
in maize was estimated as 10⁻⁴, which is 1-3 orders of magnitude higher
than frequencies reported for gene targeting by homologous recombination
in *plants*. The heritable changes in maize genes engineered by this
approach create opportunities for basic studies of *plant* gene function
and agricultural trait manipulation and also provide a system for
studying mismatch repair mechanisms in maize.

DESCRIPTORS:

...BIOSYSTEMATIC NAMES: Monocotyledones, Angiospermae, Spermatophyta,
Plantae
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*

CHEMICALS & BIOCHEMICALS: *chimeric* RNA/DNA *oligonucleotides*--

3/3,K/8 (Item 8 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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11312086 BIOSIS NO.: 199800093418

Cloning-free PCR-based allele replacement methods.

AUTHOR: Erdeniz Naz; Mortensen Uffe H; Rothstein Rodney(a)
AUTHOR ADDRESS: (a)Dep. Genet. and Dev., Columbia Univ., Coll. Phys. and
Surgeons, New York, NY 10032-2704**USA
JOURNAL: Genome Research 7 (12):p1174-1183 Dec., 1997
ISSN: 1088-9051
DOCUMENT TYPE: Article
RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Efficient homologous recombination permits the directed introduction of specific *mutations* into the yeast genome. Here we describe a cloning-free, PCR-based allele replacement method that simplifies allele transfer between yeast strains. The desired allele...

...single copy of the new allele in the target strain. Specifically, the desired allele is amplified by PCR with a pair of adaptamers, which are *chimeric* *oligonucleotides* that are used to amplify the allele and differentially tag its 5' and 3' ends. These tags allow the directed fusion to two different, but...

...only the desired allele is retained as a result of direct repeat recombination. A simple modification of this method allows the creation of de novo *mutations* in the genome.

DESCRIPTORS:

...BIOSYSTEMATIC NAMES: Fungi, *Plantae*

...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Nonvascular *Plants*;
Plants

CHEMICALS & BIOCHEMICALS: *chimeric* *oligonucleotides*

3/3,K/9 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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09912102 Genuine Article#: 463FQ No. References: 21

Title: Chloroplast lysates support directed *mutagenesis* via modified DNA and *chimeric* RNA/DNA *oligonucleotides*

Author(s): Kmiec EB; Johnson C; May GD (REPRINT)

Corporate Source: Samuel Roberts Noble Fdn Inc, Div Plant Biol, 2510 Sam Noble Pkwy/Ardmore//OK/73401 (REPRINT); Samuel Roberts Noble Fdn Inc, Div Plant Biol, Ardmore//OK/73401; Univ Delaware, Dept Biol Sci, Newark//DE/19716

Journal: PLANT JOURNAL, 2001, V27, N3 (AUG), P267-274

ISSN: 0960-7412 Publication date: 20010800

Publisher: BLACKWELL SCIENCE LTD, P O BOX 88, OSNEY MEAD, OXFORD OX2 ONE, OXON, ENGLAND

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Chloroplast lysates support directed *mutagenesis* via modified DNA and *chimeric* RNA/DNA *oligonucleotides*

...Abstract: gene-conversion events in vitro through a process involving proteins from several DNA-repair pathways. Recent experiments have extended the utility of these molecules to *plants*, and we previously demonstrated that *plant* cell-free extracts are competent to support oligonucleotide-directed genetic repair. Using this system, we are studying Arabidopsis DNA-repair mutants and the role of *plant* proteins in the DNA-repair process. Here we describe a method for investigating mechanisms of plastid DNA-repair pathways. Using a genetic readout system in bacteria and *chimeric* or modified DNA *oligonucleotides* designed to direct the conversion of *mutations* in antibiotic resistance genes, we have developed an assay for genetic repair of *mutations* in a spinach chloroplast lysate system. We report genetic repair of point and frameshift *mutations* directed by both types of modified oligonucleotides. This system enables the mechanistic study of plastid gene repair and facilitates the direct comparison between *plant* nuclear and organelle DNA-repair pathways.

...Identifiers--ESCHERICHIA-COLI RECA; TARGETED GENE REPAIR;
CELL-FREE-EXTRACTS; RECOMBINATION; ORGANIZATION; *MUTATIONS*; *SEQUENCE*;
MUTANTS; GENOME

3/3,K/10 (Item 2 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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09791125 Genuine Article#: 447WZ No. References: 5

Title: A tool for site-specific gene repairing: Chimeraplasty

Author(s): Ouyang LM; Zhang SL; Liu ZM

Corporate Source: E China Univ Sci & Technol, Coll Bioengn, Shanghai

200237//Peoples R China/; Acad Mil Med Sci, Inst Biotechnol, Beijing

100071//Peoples R China/

Journal: PROGRESS IN BIOCHEMISTRY AND BIOPHYSICS, 2001, V28, N3 (JUN), P 322-325

ISSN: 1000-3282 Publication date: 20010600

Publisher: SCIENCE PRESS, 16 DONGHUANGCHENGGEN NORTH ST, BEIJING 100717, PEOPLES R CHINA

Language: Chinese Document Type: ARTICLE (ABSTRACT AVAILABLE)

...Abstract: gene therapy, without changing the whole gene. Chimeraplasty is a tool for site-specific gene repairing which developed rapidly in recent years. The RNA/DNA *chimeric* *oligonucleotide* can located to the exact site and repair the wrong base in situ by complementing to the host chromosome DNA sequence, and it can also be used to produce targeted *mutation*. It has been successfully applied in the gene therapy of some single gene genopathy and *plant* genetical modification. The principle, examples and prospect of this technique was described.

3/3,K/11 (Item 3 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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09734490 Genuine Article#: 443VF No. References: 34

Title: Targeted correction of the point *mutations* of beta-thalassemia and targeted *mutagenesis* of the nucleotide associated with HPFH by RNA/DNA oligonucleotides: Potential for beta-thalassemia gene therapy

Author(s): Li ZH; Liu DP (REPRINT) ; Yin WX; Guo ZC; Liang CC

Corporate Source: Chinese Acad Med Sci, Inst Basic Med Sci, Natl Lab Med Mol Biol, Beijing 10005//Peoples R China/ (REPRINT); Chinese Acad Med

Sci, Inst Basic Med Sci, Natl Lab Med Mol Biol, Beijing 10005//Peoples R

China/; Peking Union Med Coll, Beijing 10005//Peoples R China/

Journal: BLOOD CELLS MOLECULES AND DISEASES, 2001, V27, N2 (MAR-APR), P 530-538

ISSN: 1079-9796 Publication date: 20010300

Publisher: ACADEMIC PRESS INC, 525 B ST, STE 1900, SAN DIEGO, CA 92101-4495 USA

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Targeted correction of the point *mutations* of beta-thalassemia and targeted *mutagenesis* of the nucleotide associated with HPFH by RNA/DNA oligonucleotides: Potential for beta-thalassemia gene therapy

Abstract: An RNA/DNA *chimeric* *oligonucleotide* was found to be effective in the targeted correction of point *mutations* in Escherichia coli, *plant*, and mammalian genomes. This strategy, named chimeraplasty, has the potential for gene therapy of many genetic diseases caused by point *mutations*. beta -Thalassemia is a very common human genetic disease and in most cases it is caused by point *mutations*. To test whether the chimeraplasty can be used to correct the point *mutations* responsible for beta -thalassemia, we introduced one *mutated* beta -globin gene, betaE, into MEL cells and successfully corrected the point *mutation* of the betaE gene with the highest correction efficiency of 1.9%. Furthermore, a targeted -202C -->G *mutation* of the G gamma -globin gene, which is associated with the elevated C gamma -globin gene expression in the adult stage, was introduced into HeLa...

3/3,K/12 (Item 4 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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09691196 Genuine Article#: 435PG No. References: 80

Title: Genetic modification and *plant* food allergens: risks and benefits
Author(s): Shewry PR (REPRINT) ; Tatham AS; Halford NG
Corporate Source: Univ Bristol, Dept Agr Sci, IACR, Long Ashton Res
Stn, Bristol BS41 9AF/Avon/England/ (REPRINT); Univ Bristol, Dept Agr Sci
, IACR, Long Ashton Res Stn, Bristol BS41 9AF/Avon/England/
Journal: JOURNAL OF CHROMATOGRAPHY B, 2001, V756, N1-2 (MAY 25), P327-335
ISSN: 0378-4347 Publication date: 20010525
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS
Language: English Document Type: REVIEW (ABSTRACT AVAILABLE)

Title: Genetic modification and *plant* food allergens: risks and benefits
Abstract: *Plant* genetic engineering has the potential to both introduce
new allergenic proteins into foods and remove established allergens. A
number of allergenic *plant* proteins have been characterized, showing
that many are related to proteins which have potentially valuable
properties for use in nutritional enhancement, food processing and crop
protection. It is therefore important to monitor the allergenic
potential of proteins used for *plant* genetic engineering and major
biotechnology companies have established systems for this. Current
technology allows gene expression to be down-regulated using antisense
or co-suppression and future developments may allow targeted gene
mutation or gene replacement. However, the application of this
technology may be limited at least in the short term by the presence of
multiple allergens and...

...Identifiers--LIPID-TRANSFER PROTEINS; *CHIMERIC* RNA/DNA
OLIGONUCLEOTIDES; AMINO-ACID-SEQUENCE; SOYBEAN-SENSITIVE PATIENTS;
TRYPSIN-INHIBITOR FAMILY; BERTHOLLETIA-EXCELSA HBK; ALBUMIN STORAGE
PROTEINS; BIRCH POLLEN ALLERGEN; SULFUR-RICH PROTEIN; ALPHA-AMYLASE

3/3,K/13 (Item 5 from file: 34)
DIALOG(R) File 34:SciSearch(R) Cited Ref Sci
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08665393 Genuine Article#: 313ZB No. References: 47

Title: Exploring the possibilities presented by protein engineering
Author(s): Shanklin J (REPRINT)
Corporate Source: BROOKHAVEN NATL LAB, DEPT BIOL, BLDG 463, 50 BELL
AVE/UPTON//NY/11786 (REPRINT)
Journal: CURRENT OPINION IN PLANT BIOLOGY, 2000, V3, N3 (JUN), P243-248
ISSN: 1369-5266 Publication date: 20000600
Publisher: CURRENT BIOLOGY LTD, 84 THEOBALDS RD, LONDON WC1X 8RR, ENGLAND
Language: English Document Type: REVIEW (ABSTRACT AVAILABLE)

...Abstract: enzyme activities and creation of proteins that are tailored
to have specific properties. These technologies have far-reaching
consequences for the future design of crop *plants* and the storage
compounds within them.

...Identifiers--*CHIMERIC* RNA/DNA *OLIGONUCLEOTIDES*; IN-VITRO EVOLUTION;
DIRECTED EVOLUTION; SUBSTRATE-SPECIFICITY; RANDOM *MUTAGENESIS*; DIIRON
PROTEINS; SUBTILISIN-E; DESIGN; DESATURASE; GENES

3/3,K/14 (Item 1 from file: 76)
DIALOG(R) File 76:Life Sciences Collection
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02603278 5111715

Oligonucleotide-directed *plant* gene targeting

Oh, T.J.; May, G.D.

Plant Biology Division, The Samuel Roberts Noble Foundation, 2510 Sam Noble
Parkway, Ardmore, OK 73402, USA

Current Opinion in Biotechnology vol. 12, no. 2, pp. 169-172 (2001)

ISSN: 0958-1669

DOCUMENT TYPE: Journal article; Review article LANGUAGE: ENGLISH

SUBFILE: Agricultural and Environmental Biotechnology Abstracts

Oligonucleotide-directed *plant* gene targeting

Chimeric RNA/DNA *oligonucleotides* (COs) have been used to cause site-specific base changes in episomal and chromosomal targets in mammalian and *plant* cells. These molecules are designed to pair with homologous sequences or target sites in genomic DNA, and thus can be used to introduce a base change in known DNA sequences. The ability to target and generate site-specific gene modifications in *plant* species gives researchers the capability to enhance a number of value-added traits in ways not possible with current recombinant DNA technologies. With the tremendous...
...the modifications are made to endogenous genes. Positional effects and the onset of gene silencing should not mitigate these results. An in vivo site-specific *mutagenesis* system for *plants* may have broad industrial applications as well. The modification of lipid biosynthetic pathways, herbicide tolerance, and the directed evolution of industrial enzymes are all within...

DESCRIPTORS: Gene targeting; *Plants*; RNA; DNA; Reviews; oligonucleotides

3/3,K/15 (Item 2 from file: 76)

DIALOG(R)File 76:Life Sciences Collection

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02401877 4602693

The greening of *chimeric* *oligonucleotides*

Feldmann, K.A.

Ceres, 3007 Malibu Canyon Road., Malibu, CA 90265, USA

Nature Biotechnology vol. 17, no. 9, pp. 857-858 (1999)

ISSN: 1087-0156

DOCUMENT TYPE: Journal article; Review article LANGUAGE: ENGLISH

SUBFILE: Agricultural and Environmental Biotechnology Abstracts

The greening of *chimeric* *oligonucleotides*

The era of genomics is rapidly delivering to our desktops the sequence of every gene in a number of *plant* genomes. These sequences will certainly advance our understanding of *plant* genetics, but they alone will not provide a clear indication of gene function. For this purpose, a mutant corresponding to each gene will be the single most valuable tool. Two recent PNAS papers describe a new approach for introducing targeted *mutations* into *plant* genes. Researchers at Pioneer (Des Moines, IA) and Boyce Thompson Institute (Ithaca, NY) have independently shown that *chimeric* *oligonucleotides*, previously heralded as promising gene therapy reagents in mammalian systems, can be used to induce specific base changes in target genes of corn cell line...

DESCRIPTORS: Gene targeting; Reviews; *Chimeras*; *oligonucleotides*; Zea mays; Nicotiana tabacum

...SECTION HEADING: *Plants*; 32000

3/3,K/16 (Item 3 from file: 76)

DIALOG(R)File 76:Life Sciences Collection

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02397171 4569817

Gene therapy in *plants*

Hohn, B.; Puchta, H.

Friedrich Miescher Institut, P.O. Box 2543, CH-4002 Basel Switzerland

Proceedings of the National Academy of Sciences, USA vol. 96, no. 15, pp.

8321-8323 (1999)

ISSN: 0027-8424

DOCUMENT TYPE: Journal article LANGUAGE: ENGLISH

SUBFILE: Genetics Abstracts

Gene therapy in *plants*

...of gene function through the analysis of gene malfunction. Modern

genetics and genomics require ways for in situ modification of genes, by means of point *mutations*, deletions, and additions. The availability of sequence information of many organisms dictates rapid development of reverse genetics procedures. Until recently, targeting of genes with the...

...homologous recombination-dependent gene targeting (hrdGT), was the method of choice, at least for mammalian systems. However, in higher eukaryotic organisms such as mammals and *plants*, exogenously introduced DNA preferably integrates in random positions in the genome, by the process of illegitimate recombination, and only infrequently can targeted integration events be detected. Recently an alternative strategy became available for precise reverse genetics. Specific *chimeric* *oligonucleotides*, COs, consisting of DNA and RNA stretches, were found to induce point *mutations* in several mammalian genes tested (see below). This technique, here referred to as *chimeric* *oligonucleotide*-dependent mismatch repair, cdMMR, has now been used for *plants*: this issue of the Proceedings includes two reports describing stable changes in the genomes of tobacco and maize after treatment with *chimeric* *oligonucleotides*.

3/3,K/17 (Item 1 from file: 144)

DIALOG(R)File 144:Pascal

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14617522 PASCAL No.: 00-0287662

**Engineering herbicide-resistant maize using *chimeric* RNA/DNA
*oligonucleotides***

TONG ZHU; METTENBURG K; PETERSON D J; TAGLIANI L; BASZCZYNSKI C L
Trait & Technology Development, Pioneer Hi-Bred International, Inc., 7250
NW 62nd Ave., Johnston, IA 50131-0552, United States
Journal: Nature biotechnology, 2000, 18 (5) 555-558
Language: English

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**Engineering herbicide-resistant maize using *chimeric* RNA/DNA
*oligonucleotides***

Maize *plants* resistant to imidazolinone herbicides were engineered through targeted modification of endogenous genes using *chimeric* RNA/DNA *oligonucleotides*. A precise single-point *mutation* was introduced into genes encoding acetohydroxyacid synthase (AHAS), at a position known to confer imidazolinone resistance. Phenotypically normal *plants* from the converted events (C SUB 0) were regenerated from resistant calli and grown to maturity. Herbicide leaf painting confirmed the resistance phenotype in C SUB 0 *plants* and demonstrated the anticipated segregation pattern in C SUB 1 progeny. DNA cloning and sequencing of the targeted region in resistant calli and derived C SUB 0 and C SUB 1 *plants* confirmed the expected *mutation*. These results demonstrate that oligonucleotide-mediated gene manipulation can be applied to crop improvement. This approach does not involve genomic integration of transgenes. Since the...

English Descriptors: *Mutagenesis*; Resistance; Inheritance(genetics);
Point *mutation*; Enzyme; Zea mays; Gene; Oligonucleotide; Cereal crop;
Herbicide

French Descriptors: *Mutagenese*; Resistance; Heredite; *Mutation*
ponctuelle; Enzyme; Zea mays; Gene; Oligonucleotide; *Plante* cerealiere;
Herbicide; acetohydroxyacid synthase

Spanish Descriptors: *Mutagenesis*; Resistencia; Herencia(genetica);
Mutacion puntual; Enzima; Zea mays; Gen; Oligonucleotido; *Planta*
cerealista; Herbicida

3/3,K/18 (Item 1 from file: 266)

DIALOG(R)File 266:FEDRIP

00298954

IDENTIFYING NO.: 1R01CA89325-01A1 AGENCY CODE: CRISP

Regulation of Targeted Gene Correction

PRINCIPAL INVESTIGATOR: GAMPER, HOWARD B

ADDRESS: UNIVERSITY OF DELAWARE WOLF HALL NEWARK, DE 19716

PERFORMING ORG.: UNIVERSITY OF DELAWARE, NEWARK, DELAWARE

SPONSORING ORG.: NATIONAL CANCER INSTITUTE

FY : 2001

SUMMARY: Chimeric DNA/RNA double hairpins are synthetic oligonucleotides that direct targeted nucleotide substitutions in bacteria, yeast, *plants* and animals. We have postulated that cellular recombinases catalyze joint molecule formation between these oligonucleotides and homologous dsDNA. According to our model, resolution of these joints can be accompanied by point *mutation* of the target DNA when the oligonucleotide is mismatched within the intermediate joint. Since chimeric hairpins are effective gene repair agents in yeast, we propose...

...with whole cells, cell-free extracts, and purified protein with the goal of delineating the mechanism of joint molecule formation and gene substitution or frameshift *mutations* in yeast will be monitored by targeting episomal or chromosomal genes that express a fluorescent signal or an antibiotic resistance marker. Targeting of the episomal...

... base will be used as substrates to study targeted nucleotides exchange. The mechanism which emerges from this study should provide guidance in the use of *chimeric* hairpin *oligonucleotides* in other systems including *plant*, animal and human cells.

DESCRIPTORS: psoralen; cell free system; crosslink; drug resistance; yeast; fusion gene; fungal genetics; frameshift *mutation*; point *mutation*; synapse; transposon /insertion element; DNA repair; oligonucleotide; bacterial protein; DNA binding protein; fungal protein

3/3,K/19 (Item 2 from file: 266)

DIALOG(R)File 266:FEDRIP

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00286327

IDENTIFYING NO.: 5R29AI39201-05 AGENCY CODE: CRISP

REARRANGEMENT MECHANISMS OF CRITHIDIA RETROTRANSPOSONS

PRINCIPAL INVESTIGATOR: GABRIEL, ABRAM

ADDRESS: RUTGERS-STATE UNIV OF NEW JERS 679 HOES LANE PISCATAWAY, NJ 08855

PERFORMING ORG.: RUTGERS THE ST UNIV OF NJ NEW BRUNSWICK, NEW BRUNSWICK, NEW JERSEY

SPONSORING ORG.: NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

FY : 2001

...SUMMARY: CRE2. CRE-elements are members of the little understood family of mobile genes known as non-LTR retrotransposons that are widely distributed in mammals, insects, *plants*, trypanosomatids, and fungi. Evidence suggests that this class of transposon is involved in such diverse processes as genome evolution, pseudogene formation, and human genetic disease...

DESCRIPTORS: eukaryote; polymerase chain reaction; site directed *mutagenesis*; genetic mapping; genetic marker; molecular cloning; gene rearrangement; open reading frame; restriction fragment length polymorphism; gene conversion; western blotting; transposon /insertion element; nucleic acid sequence; *oligonucleotide*; RNA directed DNA polymerase; *chimeric* protein; Crithidia; northern blotting; southern blotting; enzyme activity; gel mobility shift assay; gene targeting

3/3,K/20 (Item 1 from file: 357)

DIALOG(R) File 357:Derwent Biotechnology Abs
(c) 2001 Derwent Publ Ltd. All rts. reserv.

0240970 DBA Accession No.: 99-10544 PATENT

***Chimeric* *oligonucleotide* used to introduce targeted alterations or mismatches into the genomes of *plants*- targeted maize
3-phosphoshikimate-1-carboxyvinyltransferase,
acetohydroxy-acid-synthase *mutagenesis* method, useful for producing
herbicide resistance to e.g. sulfonylurea**

AUTHOR: Baszczynski C L; Duesing J H; Peterson D J; Tagliani L A; Zhu T
; Bowen B A

CORPORATE SOURCE: Des Moines, IA, USA.

PATENT ASSIGNEE: Pioneer-Hi-Bred-Int. 9999

PATENT NUMBER: WO 9925853 PATENT DATE: 99990527 WPI ACCESSION NO.:
99-357619 (9930)

PRIORITY APPLIC. NO.: -0 9898235 APPLIC. DATE: 98-90828

NATIONAL APPLIC. NO.: WO 98 a24484 APPLIC. DATE: 98 all16

LANGUAGE: English

***Chimeric* *oligonucleotide* used to introduce targeted alterations or mismatches into the genomes of *plants*- targeted maize
3-phosphoshikimate-1-carboxyvinyltransferase,
acetohydroxy-acid-synthase *mutagenesis* method, useful for producing
herbicide resistance to e.g. sulfonylurea**

ABSTRACT: A ***chimeric* *oligonucleotide*** (I) containing a DNA sequence flanked by RNA sequences is new. (I) is homologous to a ***plant*** DNA sequence (II), and can form a duplex. Also claimed are: introducing an alteration to a target sequence in a ***plant*** using (I); inactivating (II) using (I); ***plants*** and their seeds having a genomic DNA sequence altered by this method; and creating a predetermined nucleotide pair mismatch in a target sequence of a ***plant*** cell genome. (I) are used to introduce targeted alterations or mismatches into ***plants***, particularly maize (*Zea mays*), e.g. for gene correction, site-specific ***mutagenesis***, gene knockout (particularly for the removal of marker genes introduced during ***plant*** transformation) and allelic replacement, especially for generating ***plants*** with herbicide resistance. The method is especially used to confer herbicide resistance to sulfonylureas or imidazolinones by alteration of the 3-phosphoshikimate-1-carboxyvinyltransferase (EC...

DESCRIPTORS: targeted maize 3-phosphoshikimate-1-carboxyvinyltransferase, acetohydroxy-acid-synthase ***mutagenesis***, knockout method, ***chimeric* *oligonucleotide*** particle bombardment, appl. sulfonylurea, imidazolinone herbicide resistance ***plant*** cereal grass *Zea mays* enzyme EC-4.1.3.18 EC-2.5.1.19 pesticide resistance DNA sequence RNA sequence crop improvement biolistic (Vol...

...SECTION: ***Plant*** Genetic Engineering; GENETIC ENGINEERING AND
FERMENTATION

3/3,K/21 (Item 2 from file: 357)

DIALOG(R) File 357:Derwent Biotechnology Abs
(c) 2001 Derwent Publ Ltd. All rts. reserv.

0221747 DBA Accession No.: 98-03344 PATENT

**Oligonucleotide for altering a genomic sequence in eukaryotes- *chimeric*
mutation vector *oligonucleotide* analog for site-directed
mutagenesis, gene therapy, gene targeting or transgenic *plant*
production**

AUTHOR: Kmiec E B

CORPORATE SOURCE: Philadelphia, PA, USA.

PATENT ASSIGNEE: Univ.Philadelphia-Thomas-Jefferson 1997

PATENT NUMBER: WO 9748714 PATENT DATE: 971224 WPI ACCESSION NO.:
98-063068 (9806)

PRIORITY APPLIC. NO.: US 664487 APPLIC. DATE: 960617

NATIONAL APPLIC. NO.: WO 97US10538 APPLIC. DATE: 970616

LANGUAGE: English

- ***chimeric* *mutation* vector *oligonucleotide* analog for site-directed
mutagenesis, gene therapy, gene targeting or transgenic *plant*
production**

ABSTRACT: A new ***oligonucleotide* analog (ON) *chimeric* *mutation* vector**
for altering a eukaryotic gene contains: a 1st strand of at least 15
bases, with at least 3 nuclease resistant ribo-type bases (2...

... The ON may contain at least 14 bases, or a pair of at least 7-base
regions, corresponding to a fragment of a mammal or ***plant* gene** or its
complement. The ON may have a hairpin cap attached to the 1st or 2nd
strand, or a linker between the 3'-end of the 1st strand and the 5'-end
of the 2nd strand. The ON may contain a ***mutator* region**, and may be
maintained within a cell nucleus to induce site-directed ***mutagenesis***,
e.g. for gene therapy, gene targeting or transgenic ***plant* production**.
(68pp)

DESCRIPTORS: ***chimeric* *mutation* vector *oligonucleotide* analog, appl.**
site-directed *mutagenesis*, gene therapy, gene targeting, transgenic
***plant* construction gene transfer crop improvement (Vol.17, No.7)**

...SECTION: ***Plant* Genetic Engineering; GENETIC ENGINEERING AND
FERMENTATION**

3/3,K/22 (Item 1 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

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132161785 CA: 132(13)161785u JOURNAL

Gene targeting in plants via site-directed mutagenesis

AUTHOR(S): Kipp, Peter B.; Van Eck, Joyce M.; Beetham, Peter R.; May,
Gregory D.

LOCATION: Boyce Thompson Institute for Plant Research Inc., Ithaca, NY,
USA

JOURNAL: Methods Mol. Biol. (Totowa, N. J.) DATE: 2000 VOLUME: 133

NUMBER: Gene Targeting Protocols PAGES: 213-221 CODEN: MMBIED ISSN:
1064-3745 LANGUAGE: English PUBLISHER: Humana Press Inc.

3/3,K/23 (Item 2 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

(c) 2001 AMERICAN CHEMICAL SOCIETY. All rts. reserv.

131014845 CA: 131(2)14845q PATENT

**site-directed manipulation of herbicide-resistance genes in plants with
RNA-DNA chimeric oligonucleotides**

INVENTOR(AUTHOR): Baszczyński, Christopher L.; Duesing, John H.;
Peterson, David J.; Tagliani, Laura A.; Zhu, Tong; Bowen, Benjamin A.

LOCATION: USA

ASSIGNEE: Pioneer Hi-Bred International, Inc.

PATENT: PCT International ; WO 9925853 A1 DATE: 19990527

APPLICATION: WO 98US24484 (19981116) *US 65628 (19971118) *US 98235
(19980828)

PAGES: 63 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C12N-015/82A;
C12N-015/10B; C12N-015/11B; C07H-021/00B; A01H-005/00B

DESIGNATED COUNTRIES: AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH;
CN; CU; CZ; DE; DK; EE; ES; FI; GB; GE; GH; GM; HR; HU;
ID; IL; IS; JP; KE; KG; KR; KZ; LC; LR; LS; LT; LU; LV; MD; MG; MK;
MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SL; TJ; TM; TR;
TT; UA; UG; US; UZ; VN; YU; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM

DESIGNATED REGIONAL: GH; GM; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH; CY;
DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI;
CM; GA; GN; GW; ML; MR; NE; SN; TD; TG

3/3,K/24 (Item 3 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

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130192713 CA: 130(15)192713g PATENT

The use of mixed duplex oligonucleotides to effect localized genetic changes in plants

INVENTOR(AUTHOR): Arntzen, Charles J.; Kipp, Peter B.; Kumar, Ramesh; May, Gregory D.

LOCATION: USA

ASSIGNEE: Kimeragen, Inc.

PATENT: PCT International ; WO 9907865 A1 DATE: 19990218

APPLICATION: WO 98US16267 (19980805) *US 54836 (19970805)

PAGES: 53 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C12N-015/82A; C12N-015/84B; C12N-015/82B; C12N-005/04B; A01H-004/00B

DESIGNATED COUNTRIES: AL; AM; AU; BA; BB; BG; BR; CA; CN; CU; CZ; EE; GE; HU; IL; IS; JP; KP; KR; LC; LK; LR; LT; LV; MG; MK; MN; MX; NO; NZ; PL; RO; SG; SI; SK; SL; TJ; TM; TR; TT; UA; UZ; VN; YU; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM DESIGNATED REGIONAL: GH; GM; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG

3/3,K/25 (Item 4 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

(c) 2001 AMERICAN CHEMICAL SOCIETY. All rts. reserv.

128098547 CA: 128(9)98547t PATENT

Chimeric mutational vectors having non-natural nucleotides for use in gene therapy and creation of transgenic organisms

INVENTOR(AUTHOR): Kmiec, Eric B.

LOCATION: USA

ASSIGNEE: Thomas Jefferson University

PATENT: PCT International ; WO 9748714 A1 DATE: 19971224

APPLICATION: WO 97US10538 (19970616) *US 664487 (19960617)

PAGES: 68 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C07H-021/00A; C12P-019/34B DESIGNATED COUNTRIES: AL; AM; AU; AZ; BA; BB; BG; BR; BY; CA; CN; CU; CZ; EE; GE; GH; HU; IL; IS; JP; KG; KP; KR; KZ; LC; LK; LR; LT; LV; MD; MG; MK; MN; MX; NO; NZ; PL; RO; RU; SG; SI; SK; TJ; TM; TR; TT; UA; UZ; VN; YU; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM DESIGNATED REGIONAL: GH; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; ML; MR; NE; SN; TD; TG
?